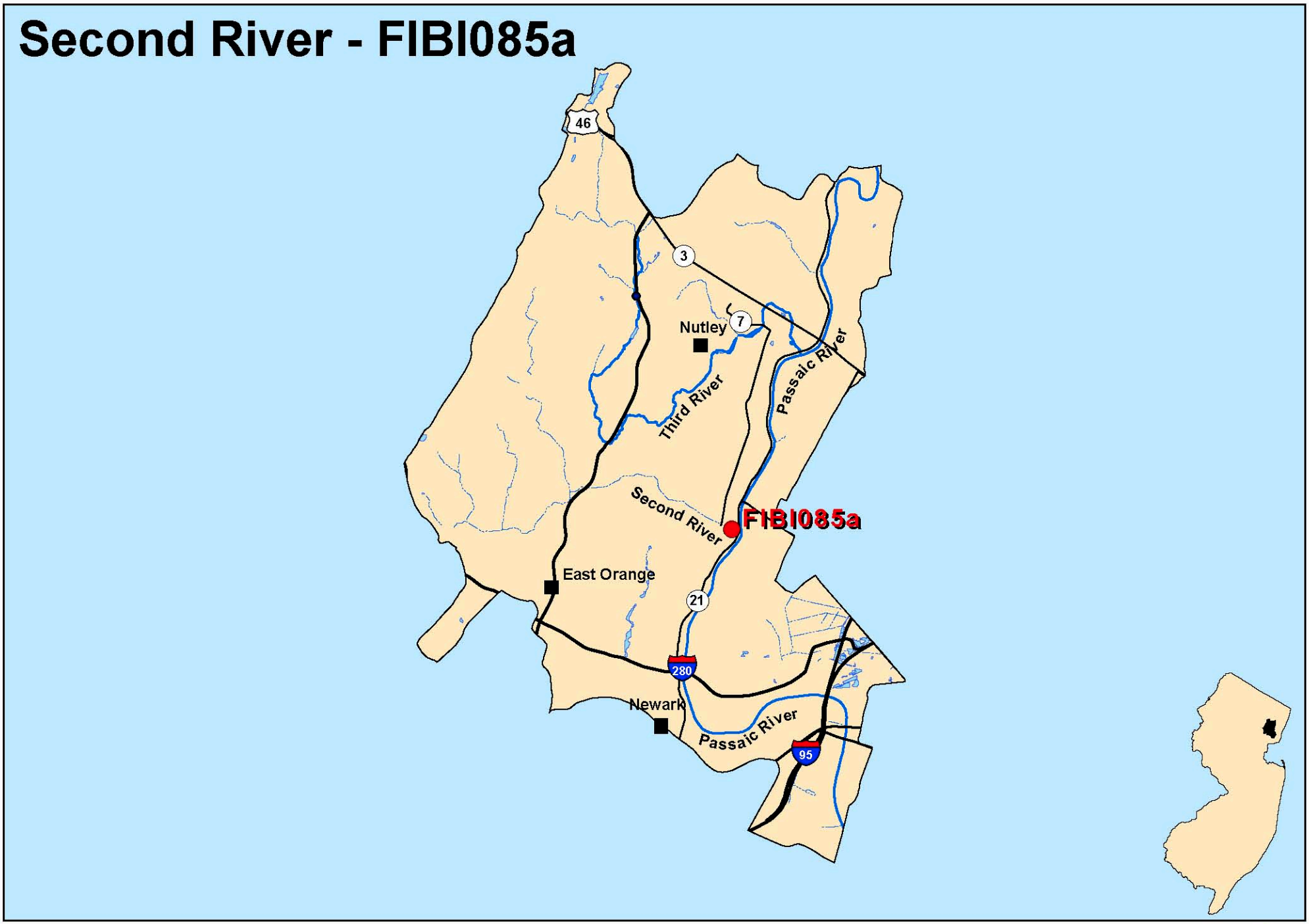
Second River - FIBI085a



FIBI Sampling Location
Small Streams (1st and 2nd Order)
Large Streams (3rd Order and Larger)

IBI Ratings
- Excellent
- Good
- Fair
- Poor

0 0.5 1 2 Miles

N

SUMMARY OF RESULTS FIBI085a

1. Stream Name:	Second River
2. Sampling Date:	7/14/2005
3. Sampling Location:	Main St.
4. Municipality	Newark
5. County:	Essex
6. Watershed Management Area:	4
7. Contributing Drainage Area:	10.8
8. Electrofishing Gear:	2 Backpacks
9. FIBI Score and Rating:	Round 1 N/A; Round 2 Poor (18)
10. Habitat Score and Rating:	Round 1 N/A; Round 2 Marginal (85)
11. Fishable Species Present:	
12. Relevant AMNET[1] Station Data:	
Proximity of FIBI station to AMNET station:	AN0293
AMNET Rating:	1998 – Moderate, 2004 – Moderate
13. Stream Chemistries:	
Dissolved Oxygen (mg/l)	8.54
Temperature ^{0}C.	19.75
pH	8.00
Conductivity (µmhos/cm)	883
14. Length of Stream Sampled:	150m
15. Water Clarity:	Clear
16. Average Open Forest Canopy:	37.2%
17. Discharge:	43.4 cfs
18. Substrate:	10% Gravel/Sand, 40% Cobble, 30% Boulder, 20% Debris
19. Habitat:	30% Riffle, 50% Run, 20% Pool
20. Snags:	Yes
21. Periphyton:	Moderate
22. Submerged Aquatic Vegetation	No
23. Outfalls:	7
24. Number of Fish Species Identified:	8
25. Total Number of Fish Collected:	414
26. Number of Fish With Anomalies:	12
27. Other Observations:	

[1] AMNET is the acronym for the DEP's ambient benthic macroinvertebrate monitoring network – a series of 820 monitoring stations located throughout the state's waterways that collects data on the health of bottom dwelling stream fauna which in turn is used to assess general water quality.


FIBI085A
2ND RIVER
MAIN STREET
NEWARK, ESSEX COUNTY
Terrace Place
Mill Street
Parking Lot
Main Street
Factory
Pump House
Legend
FIBI Start
FIBI End
Direction of Flow
FIBI Reach
Outfall
Dam
Concrete Revetment
Concrete Wall
0
50
100
150
Meters
N

FIBI085a-Second River @ Main St Excellent Good Fair **Poor**
Date Sampled - 7/14/2005

	Score
# of Fish Species	1
# of Benthic Insectivorous Species (BI) (excluding White Suckers and Bullheads)	1
# of Trout and Centrarchid Species (excluding Green Sunfish and Bluegill)	1
# of Intolerant Species (IS)	1
Proportion of Tolerant Individuals	1
Proportion of Individuals as Generalists	5
Proportion of Individuals as Insectivorous Cyprinids	1
Proportion of Individuals as Trout *whichever gives better score OR Proportion of Individuals as Piscivores (excluding American Eel)*	3
# of Individuals in Sample (excluding Tolerant Species)	1
Proportion of Individuals w/disease/anomalies (excluding blackspot)	3
Total	**18**

Stream Rating	
45-50	Excellent
37-44	Good
29-36	Fair
10-28	Poor

HABITAT ASSESSMENT FOR *HIGH* GRADIENT STREAMS Second River (FIBI085a) – 7/14/05

	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate /Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 11	20 19 18 17 16	15 14 13 12 **11**	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE 16	20 19 18 17 **16**	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regimes	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity / depth regime (usually slow-deep).
SCORE 13	20 19 18 17 16	15 14 **13** 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 12	20 19 18 17 16	15 14 13 **12** 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 **8** 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE 1	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 **1** 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE 16	20 19 18 17 **16**	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE **2** (LB)	Left 10 9	8 7 6	5 4 3	**2** 1 0
SCORE **2** (RB)	Right 10 9	8 7 6	5 4 3	**2** 1 0
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE **4** (LB)	Left 10 9	8 7 6	5 **4** 3	2 1 0
SCORE **0** (RB)	Right 10 9	8 7 6	5 4 3	2 1 **0**
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE **0** (LB)	Left 10 9	8 7 6	5 4 3	2 1 **0**
SCORE **0** (RB)	Right 10 9	8 7 6	5 4 3	2 1 **0**

HABITAT SCORE

85

HABITAT SCORES	VALUE
OPTIMAL	160 – 200
SUB-OPTIMAL	110 – 159
MARGINAL	**60 – 109**
POOR	< 60

FIBI085A-R2

Second River

07/14/2005

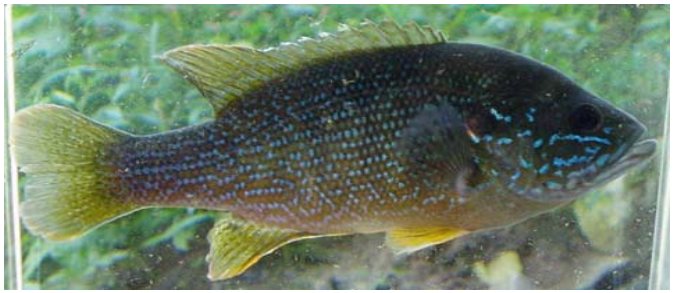
Common Name	Scientific Name	Abundance	Size Range (inches)
American Eel	*Anguilla rostrata*	377	-
White Sucker	*Catostomus commersoni*	26	-
Striped Bass	*Morone saxatilis*	6	4.8 - 6.7
Brown Bullhead	*Ameiurus nebulosus*	1	10.8 - 10.8
Green Sunfish	*Lepomis cyanellus*	1	3.9 - 3.9
Mummichog	*Fundulus heteroclitus*	1	-
Pumpkinseed	*Lepomis gibbosus*	1	3.8 - 3.8
Blacknose Dace	*Rhinichthys atratulus*	1	-

* indicates stocked fish

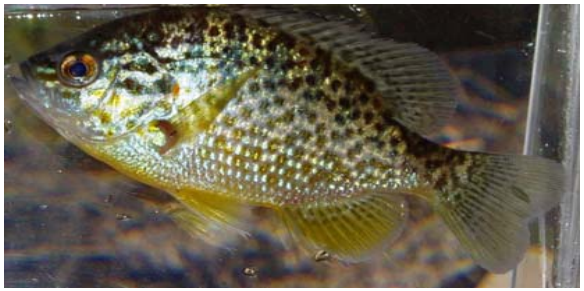
Species Identified at Second River (FIBI085a)

(Not to Scale)

White Sucker



Green Sunfish



Pumpkinseed Sunfish

Brown Bullhead

Striped Bass

Mummichog

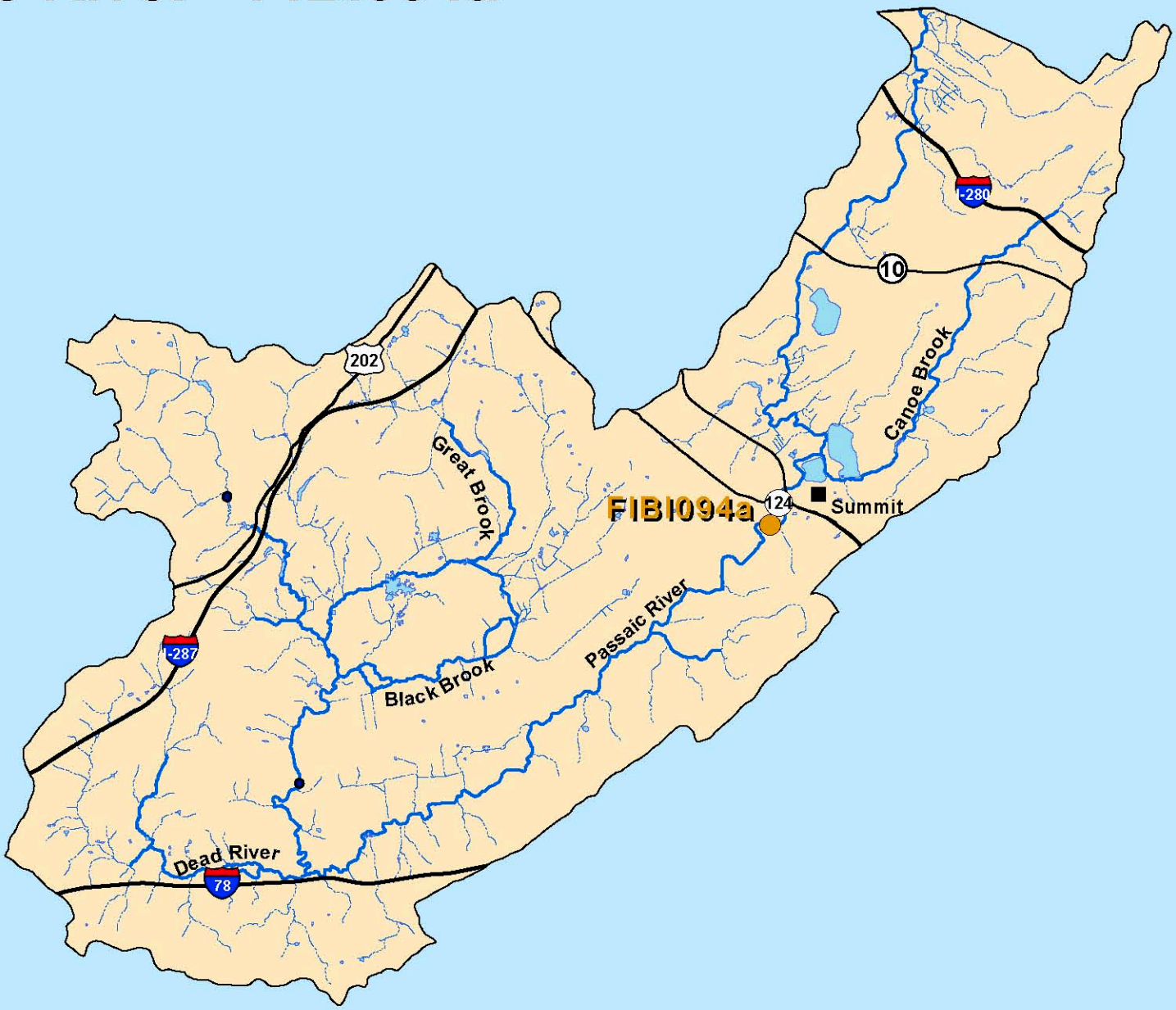
Species Identified at Second River (FIBI085a)

(Not to Scale)

American Eel

Blacknose Dace

Passaic River - FIBI094a



FIBI Sampling Location
Small Streams (1st and 2nd Order)
Large Streams (3rd Order and Larger)

IBI Ratings
- Excellent
- Good
- Fair
- Poor

0 1 2 4 Miles

N

DEPARTMENT OF ENVIRONMENTAL PROTECTION NEW JERSEY

SUMMARY OF RESULTS - FIBI094a

1. Stream Name:	Passaic River
2. Sampling Date:	8/24/2005
3. Sampling Location:	Summit Ave.
4. Municipality	Chatham
5. County:	Morris
6. Watershed Management Area:	6
7. Contributing Drainage Area:	99.7
8. Electrofishing Gear:	2 Backpacks
9. FIBI Score and Rating:	Round 1 N/A; Round 2 Fair (32)
10. Habitat Score and Rating:	Round 1 N/A; Round 2 Sub-Optimal (116)
11. Fishable Species Present:	
12. Relevant AMNET[1] Station Data:	
Proximity of FIBI station to AMNET station:	0.09mi. downstream AN0230
AMNET Rating:	1998 – Moderate, 2003 – Moderate
13. Stream Chemistries:	
Dissolved Oxygen	8.26
Temperature.	21.77
pH	7.74
Conductivity	586
14. Length of Stream Segment Sampled	150m
15. Water Clarity:	Slightly Turbid
16. Average Open Forest Canopy:	29.9%
17. Discharge:	11.7 cfs
18. Substrate:	30% Gravel/Sand, 40% Cobble, 5% Boulder, 10% Mud, 15% Silt
19. Habitat:	25% Riffle, 65% Run, 10% Pool
20. Snags	Yes
21. Outfalls	1
22. Periphyton	Slight
23. Submerged Aquatic Vegetation	Yes
24. Number of Fish Species Identified:	16
25. Total Number of Fish Collected:	686
26. Number of Fish With Anomalies:	8
27. Other observations:	

[1] AMNET is the acronym for the DEP's ambient benthic macroinvertebrate monitoring network – a series of 820 monitoring stations located throughout the state's waterways that collects data on the health of bottom dwelling stream fauna which in turn is used to assess general water quality.


FIBI094A
PASSAIC RIVER
SUMMIT AVENUE
CHATHAM, UNION COUNTY
Summit Ave.
Jersey Central Power & Light
Chatham Road
Legend
FIBI Start
FIBI End
Direction of Flow
FIBI Reach
Outfall
N
0
50
100
150
Meters

FIBI094a-Passaic River @ Summit Ave Excellent Good **Fair** Poor
Date Sampled - 8/24/2005

	Score
# of Fish Species	5
# of Benthic Insectivorous Species (BI) (excluding White Suckers and Bullheads)	3
# of Trout and Centrarchid Species (excluding Green Sunfish and Bluegill)	3
# of Intolerant Species (IS)	1
Proportion of Tolerant Individuals	5
Proportion of Individuals as Generalists	1
Proportion of Individuals as Insectivorous Cyprinids	3
Proportion of Individuals as Trout *whichever gives better score OR Proportion of Individuals as Piscivores (excluding American Eel)*	1
# of Individuals in Sample (excluding Tolerant Species)	5
Proportion of Individuals w/disease/anomalies (excluding blackspot)	5
Total	**32**

Stream Rating	
45-50	Excellent
37-44	Good
29-36	Fair
10-28	Poor

HABITAT ASSESSMENT FOR *HIGH* GRADIENT STREAMS — Passaic River (FIBI094a) – 8/24/05

	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate /Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 17	20 19 18 **17** 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 **8** 7 6	5 4 3 2 1 0
3. Velocity/Depth Regimes	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity / depth regime (usually slow-deep).
SCORE 13	20 19 18 17 16	15 14 **13** 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 9	20 19 18 17 16	15 14 13 12 11	10 **9** 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 14	20 19 18 17 16	15 **14** 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE 11	20 19 18 17 16	15 14 13 12 **11**	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE 12	20 19 18 17 16	15 14 13 **12** 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE **6** (LB)	Left 10 9	8 7 **6**	5 4 3	2 1 0
SCORE **7** (RB)	Right 10 9	8 **7** 6	5 4 3	2 1 0
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE **6** (LB)	Left 10 9	8 7 **6**	5 4 3	2 1 0
SCORE **5** (RB)	Right 10 9	8 7 6	**5** 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE **4** (LB)	Left 10 9	8 7 6	5 **4** 3	2 1 0
SCORE **4** (RB)	Right 10 9	8 7 6	5 **4** 3	2 1 0

HABITAT SCORE

116

HABITAT SCORES	VALUE
OPTIMAL	160 – 200
SUB-OPTIMAL	**110 – 159**
MARGINAL	60 – 109
POOR	< 60

FIBI094A-R2

Passaic River

08/24/2005

Common Name	Scientific Name	Abundance	Size Range (inches)
Redbreast Sunfish	*Lepomis auritus*	183	1.3 - 6.9
Tessellated Darter	*Etheostoma olmstedi*	96	-
Blacknose Dace	*Rhinichthys atratulus*	84	-
White Sucker	*Catostomus commersoni*	74	-
Creek Chub	*Semotilus atromaculatus*	65	-
Longnose Dace	*Rhinichthys cataractae*	60	-
Spottail Shiner	*Notropis hudsonius*	30	-
Banded Killifish	*Fundulus diaphanus*	30	-
Yellow Bullhead	*Ameiurus natalis*	27	1.6 - 8.0
Satinfin Shiner	*Cyprinella analostana*	12	-
Eastern Silvery Minnow	*Hybognathus regius*	11	-
Pumpkinseed	*Lepomis gibbosus*	5	3.1 - 3.7
Brown Bullhead	*Ameiurus nebulosus*	4	5.3 - 7.8
Green Sunfish	*Lepomis cyanellus*	3	2.8 - 4.4
Eastern Mudminnow	*Umbra pygmaea*	1	-
Largemouth Bass	*Micropterus salmoides*	1	5.1 - 5.1

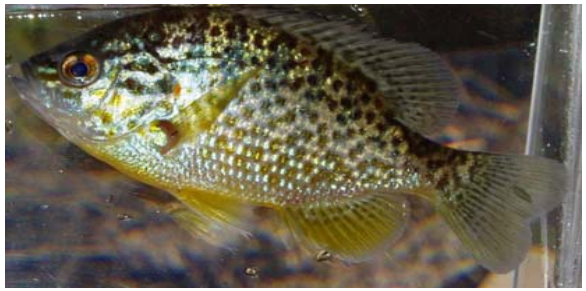
* indicates stocked fish

Species Identified at Passaic River (FIBI094a)

(Not to Scale)

White Sucker

Eastern Mudminnow



Pumpkinseed Sunfish

Banded Killifish

Largemouth Bass

Blacknose Dace

Species Identified at Passaic River (FIBI094a)

(Not to Scale)

Redbreast Sunfish

Spottail Shiner

Green Sunfish

Creek Chub

Eastern Silvery Minnow

Tessellated Darter

Species Identified at Passaic River (FIBI094a)

(Not to Scale)

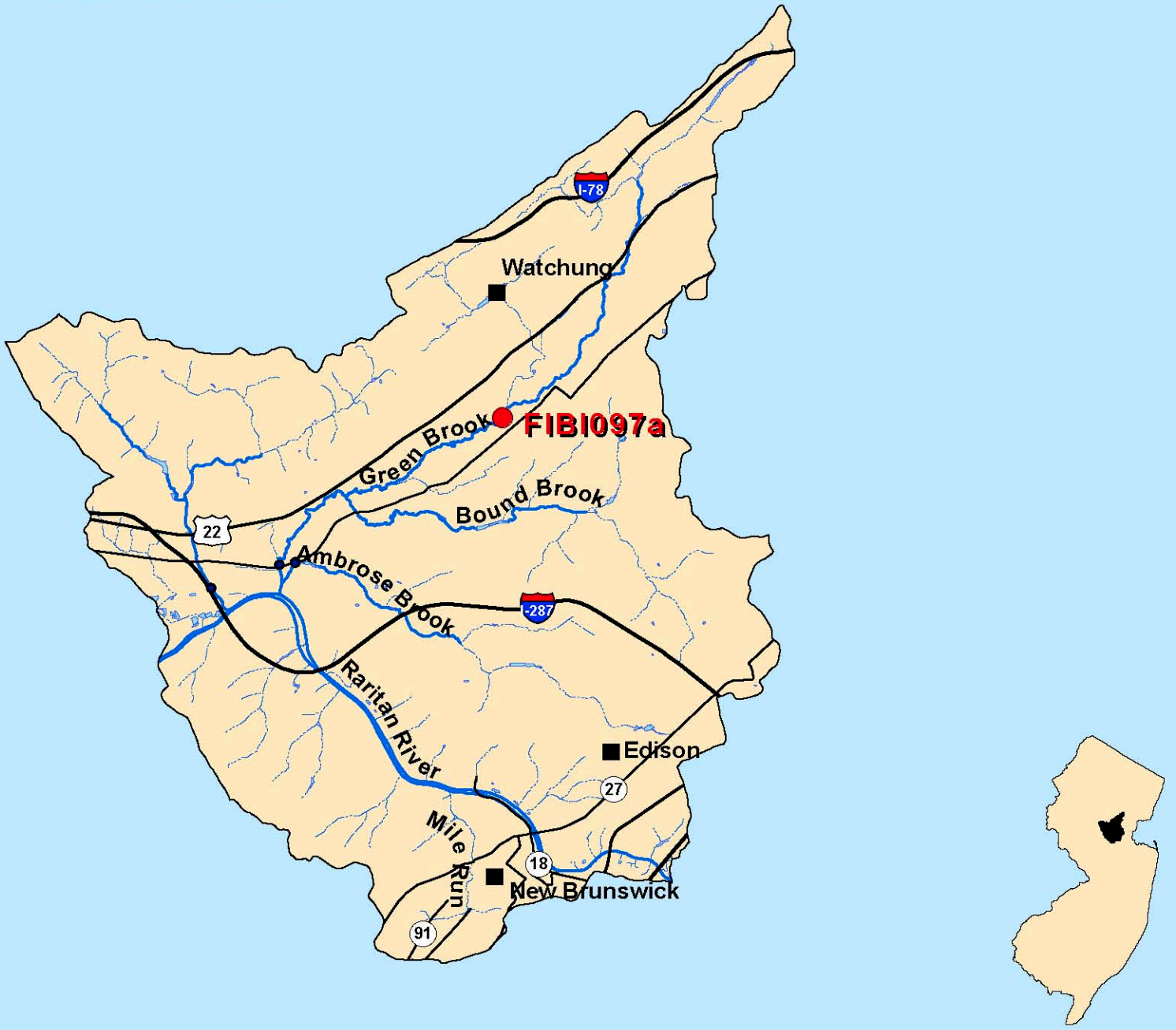
Yellow Bullhead

Brown Bullhead

Satinfin Shiner

Longnose Dace

Green Brook - FIBI097a



FIBI Sampling Location
Small Streams (1st and 2nd Order)
Large Streams (3rd Order and Larger)

IBI Ratings
- Excellent
- Good
- Fair
- Poor

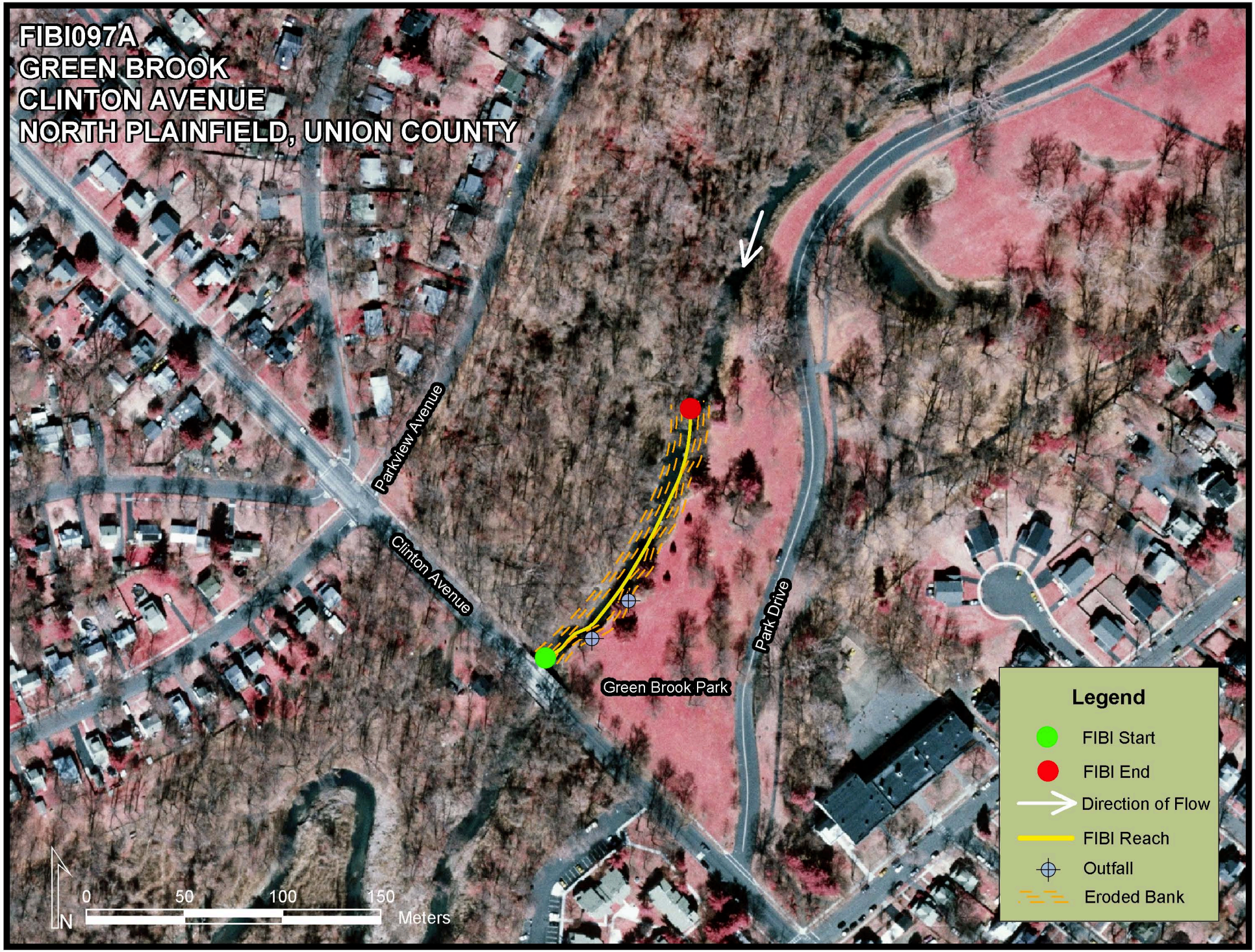
0 1 2 4 Miles

N

SUMMARY OF RESULTS - FIBI097a

1. Stream Name:	Green Brook
2. Sampling Date:	6/7/2005
3. Sampling Location:	Clinton Ave.
4. Municipality	Plainfield City
5. County:	Union
6. Watershed Management Area:	9
7. Contributing Drainage Area:	21.6
8. Electrofishing Gear:	2 Backpacks
9. FIBI Score and Rating:	Round 1 N/A; Round 2 Poor (22)
10. Habitat Score and Rating:	Round 1 N/A; Round 2 Marginal (100)
11. Fishable Species Present:	Yes
12. Relevant AMNET[1] Station Data:	
Proximity of FIBI station to AMNET station:	AN0423
AMNET Rating:	1999 – Moderate, 2004 – Moderate
13. Stream Chemistries:	
Dissolved Oxygen	5.31
Temperature.	22.9
pH	7.42
Conductivity	485
14. Length of Stream Segment Sampled	150m
15. Water Clarity:	Slightly Turbid
16. Average Open Forest Canopy:	56.9%
17. Discharge:	38 cfs
18. Substrate:	35% Gravel/Sand, 20% Cobble, 10% Boulder, 10% Mud, 25% Silt, 10% Debris
19. Habitat:	20% Riffle, 60% Run, 20% Pool
20. Snags	Yes
21. Outfalls	2
22. Periphyton	Moderate
23. Submerged Aquatic Vegetation	Yes
24. Number of Fish Species Identified:	17
25. Total Number of Fish Collected:	464
26. Number of Fish With Anomalies:	28
27. Other Observations:	

[1] AMNET is the acronym for the DEP's ambient benthic macroinvertebrate monitoring network – a series of 820 monitoring stations located throughout the state's waterways that collects data on the health of bottom dwelling stream fauna which in turn is used to assess general water quality.


FIBI097A
GREEN BROOK
CLINTON AVENUE
NORTH PLAINFIELD, UNION COUNTY
Parkview Avenue
Clinton Avenue
Park Drive
Green Brook Park
Legend
FIBI Start
FIBI End
Direction of Flow
FIBI Reach
Outfall
Eroded Bank
N
0
50
100
150
Meters

FIBI097a-Green Brook @ Clinton Ave Excellent Good Fair **Poor**
Date Sampled - 6/07/2005

	Score
# of Fish Species	5
# of Benthic Insectivorous Species (BI) (excluding White Suckers and Bullheads)	3
# of Trout and Centrarchid Species (excluding Green Sunfish and Bluegill)	3
# of Intolerant Species (IS)	1
Proportion of Tolerant Individuals	1
Proportion of Individuals as Generalists	1
Proportion of Individuals as Insectivorous Cyprinids	3
Proportion of Individuals as Trout *whichever gives better score OR Proportion of Individuals as Piscivores (excluding American Eel)*	1
# of Individuals in Sample (excluding Tolerant Species)	3
Proportion of Individuals w/disease/anomalies (excluding blackspot)	1
Total	22

Stream Rating	
45-50	Excellent
37-44	Good
29-36	Fair
10-28	Poor

HABITAT ASSESSMENT FOR *HIGH* GRADIENT STREAMS — Green Brook (FIBI097a) – 6/7/05

	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate /Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 **8** 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 **8** 7 6	5 4 3 2 1 0
3. Velocity/Depth Regimes	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity / depth regime (usually slow-deep).
SCORE 13	20 19 18 17 16	15 14 **13** 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 **8** 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 15	20 19 18 17 16	**15** 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE 15	20 19 18 17 16	**15** 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE 10	20 19 18 17 16	15 14 13 12 11	**10** 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE **2** (LB)	Left 10 9	8 7 6	5 4 3	**2** 1 0
SCORE **5** (RB)	Right 10 9	8 7 6	**5** 4 3	2 1 0
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE **3** (LB)	Left 10 9	8 7 6	5 4 **3**	2 1 0
SCORE **6** (RB)	Right 10 9	8 7 **6**	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE **1** (LB)	Left 10 9	8 7 6	5 4 3	2 **1** 0
SCORE **6** (RB)	Right 10 9	8 7 **6**	5 4 3	2 1 0

HABITAT SCORE

100

HABITAT SCORES	VALUE
OPTIMAL	160 – 200
SUB-OPTIMAL	110 – 159
MARGINAL	**60 – 109**
POOR	< 60

FIBI097a-R2

Green Brook

06/07/2005

Common Name	Scientific Name	Abundance	Size Range (inches)
White Sucker	*Catostomus commersoni*	100	-
Spottail Shiner	*Notropis hudsonius*	90	-
Green Sunfish	*Lepomis cyanellus*	78	1.9 - 4.5
Redbreast Sunfish	*Lepomis auritus*	45	2.4 - 6.5
Pumpkinseed	*Lepomis gibbosus*	32	1.4 - 4.5
Tessellated Darter	*Etheostoma olmstedi*	23	-
American Eel	*Anguilla rostrata*	23	-
Satinfin Shiner	*Cyprinella analostana*	17	-
Banded Killifish	*Fundulus diaphanus*	16	-
Golden Shiner	*Notemigonus crysoleucas*	11	-
Longnose Dace	*Rhinichthys cataractae*	9	-
Common Shiner	*Luxilus cornutus*	7	-
Bluegill	*Lepomis macrochirus*	6	1.6 - 6.5
Yellow Bullhead	*Ameiurus natalis*	4	7.7 - 9.1
Eastern Silvery Minnow	*Hybognathus regius*	1	-
Brown Bullhead	*Ameiurus nebulosus*	1	4.8 - 4.8
Blacknose Dace	*Rhinichthys atratulus*	1	-

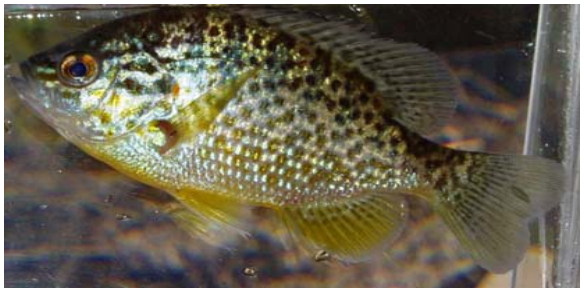
* indicates stocked fish

Species Identified at Green Brook (FIBI097a)

(Not to Scale)

White Sucker

Golden Shiner



Pumpkinseed Sunfish

Banded Killifish

American Eel

Blacknose Dace

Species Identified at Green Brook (FIBI097a)

(Not to Scale)

Redbreast Sunfish

Spottail Shiner

Green Sunfish

Common Shiner

Eastern Silvery Minnow

Tessellated Darter

Species Identified at Green Brook (FIBI097a)

(Not to Scale)

Yellow Bullhead

Brown Bullhead

Satinfin Shiner

Bluegill Sunfish

Longnose Dace